

CLAIMS

1. A system for maintaining an open airway, comprising:
a mouthpiece adapted to form a substantially sealed cavity within a patient's mouth and adapted to be coupled to a negative pressure generator that is effective to create a negative pressure within the substantially sealed cavity to prevent the patient's soft tissues of the upper airway from collapsing; and
a nasal mask adapted to deliver gases through the patient's nasal passageway.
2. The system of claim 1, wherein the mouthpiece is effective to form a substantially sealed cavity within the patient's mouth.
3. The system of claim 1, wherein the mouthpiece is effective to prevent the patient's soft tissues of the upper airway from collapsing without impinging on the tongue.
4. The system of claim 1, wherein the mouthpiece includes upper and lower portions that conform to an anatomy of the patient's upper and lower dental structures.

5. The system of claim 1, wherein the mouthpiece includes a hollow elongate member extending therefrom and coupled to a negative pressure generator.
6. The system of claim 1, wherein the nasal mask is coupled to the mouthpiece.
7. The system of claim 1, further comprising a negative pressure generator.
8. The system of claim 1, wherein the nasal mask is coupled to a device selected from the group consisting of a continuous positive airway pressure device, a mechanical ventilation device, and a positive end expiratory pressure device.
9. The system of claim 1, wherein the nasal mask includes a first and second tubular members extending therethrough and in communication with the patient's nasal passageway, the first tubular member being adapted to deliver gases through the patient's nasal passageway and the second tubular member being adapted to allow a gas sample to be taken from the nasal passageway.

10. A system for maintaining an open airway, comprising:
 - a mouthpiece adapted to form a substantially sealed cavity within a patient's mouth and including an outlet port positioned during use adjacent the opening of the patient's mouth, the outlet port being adapted to couple to a negative pressure generator to create a negative pressure within the substantially sealed cavity; and
 - a tubular member adapted to be disposed over a patient's nose and to deliver gases to the patient's nasal airway.
11. The system of claim 10, wherein the nasal mask is coupled to the mouthpiece.
12. The system of claim 10, wherein the mouthpiece is effective to prevent the patient's soft tissues of the upper airway from collapsing without impinging on the tongue
13. The system of claim 10, further comprising a negative pressure generator.

14. The system of claim 10, wherein the tubular member comprises a nasal mask that is adapted to form a seal with the patient's nasal airway.
15. The system of claim 14, wherein the nasal mask is coupled to a device selected from the group consisting of a continuous positive airway pressure device, a mechanical ventilation device, and a positive end expiratory pressure device.
16. The system of claim 10, further comprising a second tubular member in communication with the patient's nasal passageway for allowing an gas sample to be taken from the nasal passageway.
17. A method for maintaining an open airway, comprising:
 - forming a substantially sealed cavity within a patient's mouth;
 - creating a negative pressure within the substantially sealed cavity effective to prevent the patient's soft tissues of the upper airway from collapsing; and
 - delivering gases through the patient's nasal passageway.

18. The method of claim 17, wherein a mouthpiece is used to form the substantially sealed cavity.
19. The method of claim 17, wherein the mouthpiece is adapted to allow normal swallowing and breathing.
20. The method of claim 17, wherein the mouthpiece does not impinge upon the tongue.
21. The method of claim 17, wherein the mouthpiece includes upper and lower portions that conform to an anatomy of the patient's upper and lower dental structures.
22. The method of claim 21, wherein the upper and lower portions are adapted to maintain upper and lower dental structures at a fixed distance from one another.
23. The method of claim 17, wherein the mouthpiece is adapted to expand the size of the substantially sealed cavity in the mouth.
24. The method of claim 17, further comprising a hollow elongate member having a first end coupled to the mouthpiece and in communication with the substantially

sealed cavity, and a second end coupled to the negative pressure generator.

25. The method of claim 24, wherein the first end of the hollow elongate member is coupled to the mouthpiece adjacent an opening to the patient's mouth.
26. The method of claim 17, wherein the mouthpiece includes a sidewall adapted to be positioned over an opening of the patient's mouth, and a positioning member adapted to fit within the mouth to maintain the mouthpiece at a fixed position.
27. The method of claim 24, wherein the negative pressure generator operates at a pressure in the range of about 0 cm to -60 cm of water.
28. The method of claim 24, wherein the negative pressure generator removes air from the substantially sealed cavity at a rate that is in the range of about 0 cc/minute to 50 cc/minute.

29. The method of claim 17, wherein the negative pressure created within the substantially sealed cavity is further effective to remove secretions from the oral cavity.